A crossover in control design

Industrial vehicles have been fitted with in-cab displays for many years, starting with simpler, text-based systems. As the user expectations are getting higher and interaction through graphical user interfaces (GUIs) and the touchscreens is increasing, the importance of advanced human-machine interaction is also growing.

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Based on this, the industrial control business has morphed into an industry where hardware meets software, humans meet machines, life-cycle management meets new technology and engineering services meet standard products.

Swedish company CrossControl has focused its product line in this very direction. "The purpose of CrossControl is to provide technology that puts humans in control of vehicles in critical environments," said Mats Kjellberg, marketing and sales director, CrossControl.

"We provide solutions within segments like construction equipment, mining, forestry and agricultural, rail, marine, cargo and utility vehicles. Our customer base includes companies like John Deere, Bombardier Transportation, Cargotec and Atlas Copco."

The importance of advanced human-machine interaction, CrossControl said, means graphical displays with sharper interfaces can add more value when it comes to providing usability and managing the vehicle for higher utilization and up-time.

A GUI can be flexible and can adapt to a multitude of situations. An operator´s focus should remain on the main task, so the challenge is to design a system the does not distract the operation and that is providing only the necessary information.

A GUI that reflects the vehicle brand integrates better with the rest of the environment and gives a more seamless blend between the different subsystems. This reduces confusion with regards to how the controls are operated.

Cab space presents another challenge, especially when having to fit many different displays for a variety of functions. By using one, multifunctional display computer device, the location of different controls can be places in the same position. Besides system cost savings, this enables OEMs to create an integrated , user-friendly interactive system for the whole vehicle, CrossControl said.

The computing platforms adapted by the automotive business for infotainment systems are attractive for industrial vehicle application cost-wise and they are designed for lower power. The run either Linux or Windows, which opens up for use if very powerful operating system-independent software tools and libraries, like Qt and .net.

"We can build system for the industrial vehicle markets based on the technical development in these segments," said Kjellberg.

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